TRAFFIC DIGEST & Review

THE TRAFFIC INSTITUTE OF NORTHWESTERN UNIVERSITY

U.S. Bureau of Public Roads Photo

HIGHWAY MODERNIZATION PROGRAMS

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FEBRUARY TRAFFIC DEATH TOLL
"ILLUSTRATIONS FROM TRAINING"
ASHWORTH, KREML APPOINTMENTS

VOL. 5 APRIL, 1957 NO. 4

The

Traffic Digest & Review

OF THE TRAFFIC INSTITUTE, NORTHWESTERN UNIVERSITY

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This publication is produced to serve as a source of information and a medium for the expression of responsible opinion in the street and highway traffic field. From time to time there will appear herein expressions of opinion that do not necessarily reflect official Traffic Institute policy.

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VOL. 5 — APRIL, 1957 — NO. 4

The *Traffic Digest & Review* is published monthly by the Traffic Institute, Northwestern University, 1704 Judson Ave., Evanston, Ill. Entered as second-class matter at the post office at Evanston, Ill. Contents may be reprinted, provided the customary credit line is given. Printed in the U.S.A. Subscription price $5 a year.

Ashworth, Kreml Get Permanent Appointments to Traffic Institute and Transportation Center

RAY Ashworth has been named director of the Traffic Institute of Northwestern University, President J. Roscoe Miller has announced.

Mr. Ashworth, former executive assistant to the director of the Institute, has been acting director for the past two years.

Franklin M. Kreml, founder of the Institute, has been on leave to direct the new Transportation Center at Northwestern under two one-year appointments. Mr. Kreml now becomes the Center's permanent director, it was also announced.

Mr. Ashworth, a native of Wichita, Kansas, was captain of the police department there when he was named associate director of the Traffic Institute in 1936. He later served as chief of police of San Antonio, Texas, and Houston, Texas, and, just prior to returning to the Institute staff in 1955, was superintendent of police of the Port of New York Authority. He was a public safety officer in the Army during World War II.

Mr. Kreml served as chairman of the faculty committee which recommended establishment of the Transportation Center at Northwestern. He has won numerous honors in traffic and traffic safety, serving on many national committees in this field. He served overseas in World War II with the Army Transportation Corps and holds the rank of brigadier general in the organized reserve.

The Transportation Center conducts university-wide programs of education, research, and consultative services for all forms of transportation. The Traffic Institute serves officials with street and highway traffic responsibilities through its program of training, field assistance, research, and publications.

* * *

MOST STATES EXEMPT CITIES, COUNTIES, SCHOOLS FROM REGULAR AUTO LICENSE FEES

Most states exempt from regular auto license fees cars, buses, and trucks owned by cities, counties, and school districts in the state, a survey by the American Municipal Association reveals.

Only seven states do not provide by law for especially low registration fees for all motor vehicles owned by their political subdivisions: Illinois, Kansas, Louisiana, Maryland, Mississippi, New Hampshire, and Nevada. Nevada and Louisiana allow no special rates at all; New Hampshire leaves the decision on special rates to the Commissioner of Motor Vehicles. The other four allow lower fees for some vehicles owned by subdivisions but not for all.

Esso Foundation Grants $5,000 to IACP Traffic Division

The Esso Safety Foundation, New York City, has made a grant of $5,000 to the Traffic Division of the International Association of Chiefs of Police, Evanston, Ill.

The grant was announced by IACP President George A. Otlewis, chief of the Chicago Park District Police.

"We are grateful to John J. Hall, director, and to the other officers of the Esso Safety Foundation for this generous contribution," Chief Otlewis said. "These funds will help support the non-profit field assistance program our Traffic Division conducts for city and state police agencies. Through this program police traffic supervision work is constantly being upgraded. The Esso grant will be put to excellent use."

The Traffic Division of the International Association of Chiefs of Police has been providing field assistance to law enforcement agencies since 1936. In that time its staff has assisted the police departments of more than 100 cities, counties, and states in their traffic supervision functions.

Headquarters of the IACP is in Washington, D.C.

* * *

Set Highway Safety Seminar in Tokyo in May

A seminar on the engineering and traffic aspects of highway safety will be conducted May 13-23 in Toyko, Japan.

The Highway Sub-Committee of the Inland Transport Committee of the Economic Commission for Asia and the Far East will sponsor the seminar, and participants will be representatives of countries in the ECAFE region. The government of Japan will serve as host to the seminar.

Participants will study, in the setting of the developing economics of the countries in the region, such problems as traffic congestion, highway accidents in urban areas and other engineering and traffic aspects of highway safety which will affect the transport of goods and passengers.

Subjects to be covered include administrative organization and operation, traffic law enforcement, road traffic control, planning and design of various road types, prediction of future traffic, safety propaganda, and cost/benefit analyses.

Agencies specializing in the various subjects have been asked to submit papers, and these will be distributed to the participants in advance of the seminar. The Traffic Institute of Northwestern University has submitted a paper on traffic law enforcement.

* * *

God does not want us to do extraordinary things; He wants us to do ordinary things extraordinarily well.

—*Bishop Gore*

Cook County, Ill., Highway Dept.

Highway Modernization Programs

by

C. E. Fritts

Vice President, Automotive Safety Foundation
Washington, D.C.

(This paper was presented by Mr. Fritts at a seminar on highway engineering at the School of Engineering, Purdue University, Lafayette, Ind.)

Development of highways has lagged for a great many years behind the need for better facilities. This backlog of need has resulted, of course, from lack of an adequate fiscal policy in most states, as well as from wars and inflation.

The U. S. Bureau of Public Roads was directed in 1954 to cooperate with the states in making a nationwide survey of the needs of our entire highway plant. From that study came the $101 billion estimate you have heard so much about. The $101 billion figure was a statement of the cost of bringing all 3,300,000 miles of roads and streets up to an adequate standard in the next 10 years. It included the National System of Interstate and Defense Highways of 40,000 miles, premising the cost on that one particular system on standards which would be fully adequate for traffic needs in 1975.

(You will note that the title for the system now includes Defense. The words Interstate and Defense Highways give clear meaning to the purpose of the system.) When we realize that all agencies today are

spending only $5 billion for capital improvements, including the funds being expended on toll roads, it is clear that the present rate of improvement falls far short of catching up this immense backlog of existing needs.

As might be expected, there is considerable variation in the kind and degree of deficiencies in the several states. Some have taken much more positive action in the post-war period than others and as a result are in relatively better condition.

The national highway program enacted by Congress provides the largest single incentive we have had in the past three decades toward adequately meeting the problem of necessary modernization. The outstanding feature of the national program is that the Federal government will assume 90 per cent of the responsibility for financing the 40,000-mile Interstate system and get it completed in about 13 years. It is estimated this system will cost $27 billion, which is approximately one quarter of the total construction dollar needs of our entire road plant. With that proportion of the total problem guaranteed through national financing, states and local governments will have a reasonable chance of establishing programs of adequate dimensions with state and local funds.

The responsibility of the national government does not end with the Interstate System. In fact, Congress plans to continue grants-in-aid for the Federal-aid primary, secondary and urban systems at a level somewhat higher than has existed in the past. In total it is estimated that Federal financing will amount to some $37 billion in the next 13 years. This amount is roughly $26 billion more than would be provided if we were to continue at the rate of the 1954 Federal-aid Act.

This still leaves nearly two-thirds of the cost for construction to be borne by the states and local governments, and in addition they must continue to supply the funds necessary for maintenance and administration. In substance, it can be said that while the national program is undoubtedly the most important thing that has happened in transportation in our time, it still leaves tremendous responsibilities for financing and administration with the states and local governments.

This brief summary of our present status leads us logically, then, to consideration of a course of action at the state and local level most likely to achieve not only soundly conceived and financed programs, but programs which are properly integrated with the Federal program.

Need for Factual Studies

Now the first order of business in each state should be to reappraise its future program and to determine on a factual basis what shifting or redirecting of plans and policies is necessary. This can be done only if each system of roads and streets is accurately appraised on an engineering basis as to its present condition and its future need. It should now be possible to determine just what can be accomplished in the next decade

or more and what revision of fiscal policy or management responsibility is necessary to bring about a desirable end product.

In the ordinary concept, highway planning does these rather simple things:

1. Determines the amount and importance of highway transportation available to business and people over the main routes, as they now exist and as they will be needed in the future.

2. Determines, on the basis of their service, how the roads and streets should be grouped for efficient management, development, and operation.

3. Establishes highway standards adequate for present and future traffic, determines deficiencies now existing and accruing in the future, and estimates average annual expenditure required under alternative programs. Expenditures would include the cost of correcting existing and accruing deficiencies and the cost of annual maintenance and operation.

4. Analyzes historical methods and effects of highway finance; analyzes and determines the adequacy and equity of various means of financing for the future, to the end that legislative bodies are furnished a factual guide for establishing sound highway fiscal policy.

This latter element is of vital importance if we are to adopt a highway program that will produce a result matching the needs of the highway plant.

Steps in Highway Planning

With that general background let us now turn briefly to the several phases that normally constitute the highway planning process.

A first requirement is an up-to-date inventory of our physical facilities. This inventory should provide a section-by-section listing of every basic element contained in the highway plant: what its structural elements are; what its geometric elements are; the age and condition of the various elements; and the development that exists adjacent to the roadway. All data should be brought up to date, and kept there.

A main component of the inventory is the detailed analysis of the use being made of the facilities; how much and what kind of traffic is generated. Such determinations are essential because in selecting standards of improvement required, the basic function of the road is all-important.

Having assembled all basic inventory data, together with a comprehensive analysis of traffic movement, indicating not only volume but origin and destination of travel, it becomes necessary to determine whether existing systems of roads are properly constituted and their responsibility properly assigned among the several agencies of government.

There are several techniques for doing this type of analysis but mainly

they follow certain fundamental principles. The major routes of importance between population centers are those of primary state responsibility. The selection of a primary system generally is based on firmer grounds than available for other systems. Greater difficulties arise in the selection of routes of secondary importance and in assigning their responsibility.

In any event, the important thing is to get systems which are functionally consistent throughout the state and its subdivisions, and which are firmly fixed so that estimates, programs, finances, and organizations are stabilized on a consistent basis for a long time. Otherwise, planning and legislation are in a constantly shifting condition which makes impossible orderly and efficient development.

In urban areas, basic principles of classification are of equal, if not greater, importance because of the conflicts of movements characteristic of such areas. An evaluation of highway needs obviously cannot be too meaningful unless there is developed a classification plan for each area, and the fundamental interests of the city and state determined. Unfortunately, many of our urban areas today have insufficient data to do a thorough job of classification.

Standards and Analysis

Another major phase of the planning process is to establish the conditions or criteria which determine the adequacy of the present plant in all of its gradations of traffic service requirements—which range from high-type, multi-lane, fully-controlled access facilities down to the simple graded and drained access road. This is done by comparing what exists, section by section, against the standard which, based upon engineering analysis, would be considered economically appropriate to meet the traffic service and safety needs for each class of facility.

Another branch of factual information required concerns the structural age of the roadway. We know enough about our roads to be able to forecast on an actuarial basis when roadway surfaces will have to be replaced or renewed. Road life tables have been developed for main highways which give the average life that may be anticipated from a facility constructed with a given set of structural elements. In the planning process the anticipation of failure must be governed not only by the forecast of life expectancy but must be modified by an actual physical appraisal by competent engineers.

A second major element in analysis of adequacy is that of evaluating the traffic capacity of our roadways. Under conditions of greatly expanding numbers of vehicles and their usage, provision of adequate capacity with safety becomes one of the most costly and important problems to be met in reconstruction. Only in the last decade have we developed accurate criteria for setting standards that will give us capacity for anticipated volumes and service characteristics of the highways.

Structural capacity must also be determined but that is more directly related to structural adequacy of pavement design.

In analyzing capacity requirements it is necessary to keep in mind future needs. When we build a section of highway today we expect it to serve adequately for many, many years, particularly when we relocate or rebuild with a changed basic geometric design. We then set a standard which will meet the anticipated growth of traffic and avoid the over-congestion that would otherwise develop as soon as the improvements were made.

In the evolution of the highway plan, the greatest deficiency to be overcome is that of capacity. Sheer numbers of vehicles on very important segments of our network greatly exceed the space now available. This is the case not only on many major intercity routes but also, and particularly, on urban arteries. It is in the provision of needed capacity that the modern engineering solution—controlled access, or more properly, planned access—may seem to depart from past practice.

To provide space for unimpeded flow of ever-increasing traffic, and at the same time greatly cut travel time and improve safety, we must superimpose a different class of highway over our existing routes. In the past, generally speaking, we have created two classes of facilities: first, a vast mileage of roads and streets to serve property; second, a rather extensive mileage of so-called arterials. This second category has proved by and large to be neither fish nor fowl. Experience shows that the dual-purpose arterial falls short of giving adequate service to movement and at the same time creates problems for business located on the arterial.

The controlled access facility is conceived for the purpose of efficiently moving large numbers of vehicles. The controlled-access principle is by no means new, but in the past has been applied on only a very limited scale. Traffic volumes today, and those to come, fully warrant the creation of a system of such modern facilities because the vehicle drivers have only one purpose in mind—and that is to move from origin to destination as quickly and safely as possible. The express highway or freeway is the means we now have of maintaining the value of our present investment in properties and business and at the same time providing new capacity and a greatly improved transportation service to an important percentage of the movement of persons and goods.

Estimating Costs

In applying the criteria of adequacy we will, through the process described, have determined which sections of highway are now deemed to be deficient for present use, either structurally or in terms of capacity. We will have forecast the structural life to determine when physical replacement will be necessary. We will have forecast our traffic requirements to establish which sections will have to be modernized to meet

the service requirements and when such modernization should take place. Following this, we come to the determination of the type and cost of the necessary facilities.

The method of developing cost estimates utilizes cost figures derived from actual work put in place. To determine future costs for a given type of improvement, estimates are based on comparable cost experience in recent programs. It is not current practice to try to forecast the price fluctuations of highway work for any period of years. Therefore, the planning process produces costs based on current prices.

To offset our inability to forecast at long range, we need to develop a process which will measure the effect of such forces as inflation, traffic growth and so forth on a year-to-year basis. This affords some idea of trends, while avoiding the chance of serious error due to long-term prognosticating.

Program Development

With the basic analysis of need and of cost made, the next step is to translate these facts into programs for development of adequate systems of highways and street .

Inevitably it will be found that with extensive mileages of our existing systems so critically inadequate, they constitute a large percentage of the total needs over the next five or ten years. It would be a rather simple matter if a program could be adopted which would permit the construction or reconstruction of the systems in a year or two. As a practical matter we must settle for a program which will bring us up to date only on the most urgent needs within a reasonable time. We therefore must arrange a scheduling of needed improvements in some logical sequence over a definite period. This is normally done by setting up alternative programs of 10, 15 or even 20 years duration.

The principle involved in developing a program is the same, whether it be for 10, 15 or 20 years. Basically, it consists of adding together the needs as they exist and the needs as they are forecast for each program period. The sum total of needs, including maintenance and operation, are divided into annual requirements. Generally they are expressed . s average annual costs.

This provides a yardstick for fiscal analysis and enables the legislature to determine the level of financial support needed to accomplish a program for each road and street system in a given period of years. Without this yardstick no intelligent decision can be made by the legislature or administrative agency in setting up a goal to be achieved in highway improvement.

This process also provides the necessary factual background for decisions on questions of highway financing. With highway needs analyzed in relation to the time when they should be made, it is a simple matter

to consider what portion of the highway program might be financed by bonds, for example, and what portion should be on a pay-as-you-go basis.

Priority and Advance Programming

The process also gives the administrator a sound basis for determining priority of highway improvement. In applying the principles of critical evaluation of adequacy of existing facilities there is more or less automatically provided a determination of the degree of deficiency on the individual sections of the highway system. The highway administrator has immediately available to him a list of the sections that are most critical, which he may use to develop effective short range plans. It permits him to plan on a basis of three to five years in advance and to so schedule all operations of his organization. This short range programming, of course, must be controlled within the framework of the basic finance plan that has been adopted by the legislative body.

Many of our highway agencies today are using the highway needs study as the springboard for advance programming. They find that it has these advantages:

1. The entire organizational structure can be shaped to the program requirements.

2. Location and design can be scheduled more efficiently. Too many projects today are being designed under forced draft.

3. It simplifies the job of working out agreements on design, right of way acquisition and joint financing between the various levels of government. Because of the interlocking responsibilities of the several agencies—Federal, state and local—much joint planning is required.

4. Huge savings can be made by acquisition of right of way well in advance of construction, particularly in expanding metropolitan areas. This great opportunity is lost unless a firm advance plan is in effect and location lines fixed.

5. Construction schedules can be timed to achieve most favorable construction prices.

6. Maintenance can be scheduled to cut waste resulting from an indeterminate construction schedule.

7. Stop-gap improvements can be held to a minimum and more accurately evaluated as to type when a construction time table has been adopted.

8. Finally, public confidence and support are gained because of the knowledge that the administrative body is doing its job by means of constant study of the facts which guide the plan.

* * *

If what you did yesterday seems big to you, you have not done much today. —*Anonymous*

Institute Starts Rio Field Job This Month

TECHNICAL advice and assistance in traffic engineering and police traffic supervision will be given officials of Rio de Janeiro, Brazil, by the Traffic Institute of Northwestern University, under terms of a contract with the Institute of Inter-American Affairs of the International Cooperation Administration.

Work to be done under the contract will begin the latter part of April and continue for approximately six months, according to Ray Ashworth, director of the Traffic Institute.

The purpose of this six-month project will be to formulate basic engineering and police supervision programs and assist Rio de Janeiro officials in the initial application of these programs, Ashworth said.

"The original inspiration and driving force behind this contract, which is part of an overall technical cooperation agreement between the United States and Brazil, came from James S. Kemper, chairman of the Kemper Insurance Companies and American Ambassador to Brazil during the first two years of President Eisenhower's administration," Ashworth said.

"Since his return from this post Mr. Kemper has maintained his interest in obtaining this kind of technical assistance for Brazilian traffic authorities. Ambassador Kemper is one of the original and continuing supporters of the work of the Traffic Institute, having established the Kemper Foundation for Traffic Safety in 1936 for this purpose."

In traffic engineering, representatives of the Traffic Institute will make studies of the existing street system, control devices and techniques, the accident experience, the requirements of efficient traffic flow, and the organization and administration of the traffic engineering function. Detailed recommendations in each of these areas will be made, according to Ashworth.

In police traffic supervision, there will be three major areas of assistance, Ashworth said. These are (1) establishment of a modern traffic records system, (2) improvement in the training of police personnel engaged in the investigation of accidents, and (3) technical assistance in the planning and programming of police traffic supervision activity.

Hudson R. Hamm, Institute director of field service, will be in charge of the Rio assistance program and will direct the police traffic supervision work. George W. Barton will direct the traffic engineering phase. Clifford E. Fernstrom and John H. Kragie also have been assigned to the program.

* * *

Many people go throughout life committing partial suicide—destroying their talents, energies, creative qualities. Indeed, to learn how to be good to oneself is often more difficult than to learn how to be good to others.

—JOSHUA LOTH LIEBMAN, *Peace of Mind.*

Review of "Tire Dynamics"

Tire Dynamics. By Andrew J. White. Motor Vehicle Research, Inc. South Lee, N. H. 1956. 261 pages. $15.00.

Reviewed by

DONALD S. BERRY

Professor of Transportation Engineering, Purdue University

TIRE DYNAMICS reports on the result of six years of study by Motor Vehicle Research, Inc., on the variables affecting vehicle stopping distances. As stated by the author, "the primary objective of this investigation was to determine the validity of calculating the velocities of vehicles prior to braking application using skidmarks of tires as a base." The investigation also dealt with speedometer accuracy, the reliability of decelerometers, the problem of tire noise, and evaluation of methods for making stopping-distance tests.

The author makes many statements on the errors which can result when determining speeds from skidmarks. He is especially critical of the practice of selecting a coefficient of friction from a published table and using the value in making a speed computation. He points out that "speed calculations might be in error up to 20 m.p.h." (p. 151). The following are concluding statements taken from the last page of the book (p. 261):

1. "The vast differences in coefficients of friction between new, worn, and smooth tires together with differences between brands of tires in all conditions clearly show that almost any calculation is invalid."

2. "The seasonal changes that affect these coefficients of friction of the infinite number of various type road surfaces is another variable that affects these calculations." (See also statements on effects of sand, dust, and grit, p. 150).

3. "Differences in weight distribution and weight transfer of vehicles have been discussed and these differences also affect calculations."

4. "It can be reasonably concluded from this work that unless a thorough investigation of tire marks is made, the assignment of a vehicle velocity prior to brake application, using these marks as a basis of calculation, is in error."

Preliminary Tests

Most of the locked-wheel stopping tests reported by the author were made during 1951-1954, while test techniques were being developed. These preliminary tests are summarized briefly below:

Phase I—Stopping tests were made in 1951 with 11 vehicles from speeds of 10 to 50 mph, and "wide differences" found. No data are published "in view of the lack of control during this program."

Phase II—Stopping tests were made in 1952 with 21 different makes of vehicles from speeds of 20 to 60 mph. Data are not presented except for a statement on stopping distance differentials (22 ft. at 40 mph). Methods were not considered satisfactory.

Phase III—Stopping tests were made in 1953 with 21 makes of vehicles, with distances and speeds determined with the Wagner fifth wheel assembly. Data are presented for four vehicles and the author indicates that tire tread differentials influenced results. Statement is made that the many variables of instrumentation and controls precluded the establishment of fact based on repeatability.

Phase IV—Stopping tests were made from 40 mph using six different sets of tires at below-freezing temperatures on a dry runway. The average coefficient of friction for tire group 2 was only 0.48 vs .74 for tire group 3. Final statement on this series (p. 26) indicates need for new techniques to obtain comparisons of a more valid nature.

Phase V—This phase was designed primarily to test the effects of new instrumentation and techniques Four different sets of retread tires were tested from 40 mph on a dry runway, with tire-mark lengths varying from 85.0′ for one set of tires to 129′ 9″ for group 4 (p. 33). This great variation was not found in later tests, and a statement is made (p. 33) that no attempt was made to correlate the data as it would not be of value for legal use.

A photographic time-displacement method for determining the instant of brake application was developed, and checked against a braking distance detonator. It was concluded that the detonator method gave reliable results, "providing good control is exercised." Stopping distances were determined from the time the stop-light switch was actuated by brake-line pressure (p. 67).

Controlled Tests

Following development of the photographic time-displacement method of controlling the skid tests, several series of locked-wheel stopping tests were made in Florida and in Maine, to evaluate tire differences. Detailed data on speeds and stopping distances are presented in the book, and are summarized below. The coefficients of friction referred to are generally those computed from distance-speed values by the author of this review:

Florida Tests—New Tires. Six sets of new tires were tested on a little-used dry, clean bituminous airport runway, with locked-wheel stops made from speeds between 17 and 58 mph. Computed coefficients of friction varied from .59 (tire group 6) to .83 (tire group 4). These coefficients

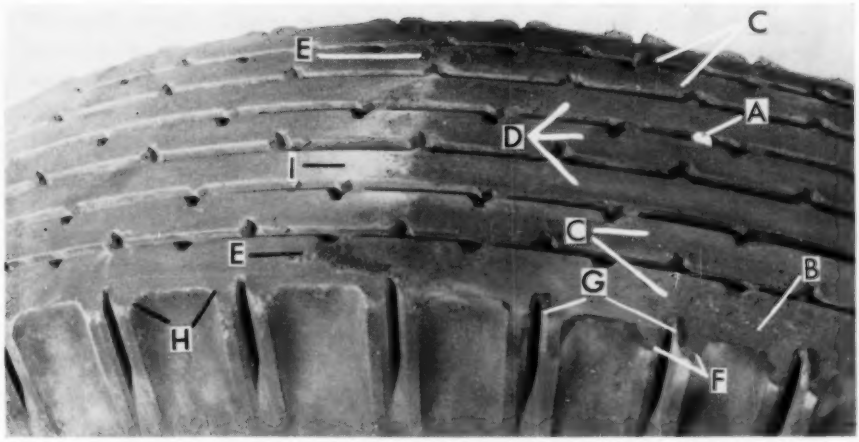

Illustration from Traffic Accident Investigator's Manual for Police

This shows what happens to a typical tire which has slid on pavement. The dark area spot on the right showing sliding is wiped out after wheel has made a few revolutions on the road. Evidences of sliding are clean dark rubbed areas at D, rolls or patches of tacky rubber dust at E, sharp corners worn on leading edges at F, and feathered trailing ridge edge as at G, compared to rounded edges from rolling tire at H and road dust at I. Pebbles in grooves as at A and grit imbedded as at B due to pavement grinding. Note that this front wheel shows much heavier signs of sliding on the edges at B, C, F, and G than in the middle at D because the front tire squashes down when it slides.

(This illustration, from the *Traffic Accident Investigator's Manual for Police* is used here solely to illustrate some of the general problems discussed in *Tire Dynamics*.)

showed very little variation with speed (coefficients for tire group 6 varied from .59 to .62). No skidmark lengths are given. (See p. 221).

Florida Tests—New vs. Smooth Tires. Six sets of new tires of identical make were obtained; tread was worn smooth on four of the sets, and to 4/32" depth on one set. Locked-wheel stops on the dry bituminous surface at speeds from 17 to 56 mph revealed shorter stopping distances for smooth tires. (Coefficients for smooth tires were .81 to .85 vs .67 to .70 for new tires). Similar differences were found on concrete (p. 232).

Maine Tests—New vs. Smooth. These tests, on a bituminous runway with some small aggregate particles at the surface, were made with new, worn, and smooth tires from speeds between 39 and 59 mph. Results (p. 241) showed stopping distances for smooth tires which were slightly longer than for tires with worn tread. Computations yielded coefficients varying from .68 to .87.

Maine Tests—New Tires. Six sets of new tires were tested on the same runway from speeds of 39 to 59 mph. Computed coefficients varied from .64 (tire group E) to .81 (tire group D). Computed coefficients were quite uniform at different speed values, except for tire group F (.66 at 39 mph; .73 at 49 mph; .66 at 59 mph). (See p. 250).

Maine Tests—Brake Balance. Locked-wheel stopping tests from 39 mph with varying brake adjustments yielded stopping distances varying from 61′-7″ to 75′-4″. Skid distances were measured and varied from 53′-1″ to 65′-1″. In all cases, skid distances were less than the measured braking distances. It is stated "this exploratory investigation further indicates the invalidity of calculation of vehicle speed from tire marks" (p. 252).

Maine Tests—Retreaded Tires. Six sets of tires retreaded in the same molds, but utilizing different tread stocks, were tested on the same dry runway and yielded coefficient of friction values varying from .69 to .85 at 60 mph (as compared to a range of .64 to .85 for the new tires). After stating these ranges, (p. 257), the author states "Speed calculations based on tire marks is again shown to be in serious error."

Maine Tests—"Siped" Tires. A set of tires with knife-cuts or "siping" was compared with a similar set of tires not siped, in locked-wheel tests from 39-59 mph. Computed coefficients for tires not siped varied from .68 to .78; the values for siped tires were .65 to .69 (p. 241).

Significance of "Tire Dynamics"

The author has added to the fund of knowledge by presenting data not previously available on the effects of differences in tires on stopping distances on dry pavements. The author correctly cautions against the use of published tables in selecting coefficients for use in computing initial speeds prior to an accident.

The author also highlights the differences between wet and dry pavements, and states that speeds computed from skidmarks on wet pavements are not conclusive. His lack of confidence in most computations of speed from skidmarks on wet pavement may be justified because of the variations in the effects of speed, amount of water, and type of tire on the coefficients of friction on wet pavement.

Unfortunately, the author makes many sweeping statements which imply that almost any computation of speeds from skidmarks is invalid. He appears to overlook the fact that it is possible to make carefully controlled tests on dry pavement which will permit computation of a *minimum* speed above which the vehicle surely must have been travelling.

The publication stresses the "wide" differences in tires. Yet the maximum variation in tread on tires used on the dry airport runway in Maine showed a range in coefficients from .64 to .86, which corresponds to a maximum range in speed of only +3 mph at a speed of 40 mph.

If the author had presented both braking distances and average skidmark distances for each set of tests, it would have been possible to have checked on the accuracy of a minimum-speed computation. Coefficients of friction could have been computed for each set of tires, using braking-

distance values. Then, estimates could be made of the minimum speed of other runs made with similar tires, by using these computed coefficients and skid-distance values recorded for those other runs.

In the following paragraphs, commonly-accepted beliefs are discussed, along with statements dealing with these beliefs, as made in *Tire Dynamics*.

Wet vs. Dry Pavements. It long has been known that wet pavements behave quite differently from dry pavements. *Tire Dynamics* quotes extensively from published work on wet pavements and describes one series of wet-pavement tests made by the author, which indicates differences by type of tire and amount of water (p. 135). The author states that speeds computed from skidmarks on wet roadways are not conclusive.

Effect of Speed. It is commonly believed that locked-wheel coefficients of friction for a dry pavement are not affected by speeds in the range from 25-50 mph. The data presented in *Tire Dynamics* support this contention.

Effect of Vehicle. It is a commonly-held belief that the make and type of passenger car used in locked-wheel stopping tests has very little effect on the braking distance as long as the brakes are adequate to lock all four wheels. *Tire Dynamics* indicates (p. 5) that different vehicles equipped with the same make of tires yield "wide" differences in stopping distances. However, data are not presented which isolates vehicle differences from tire differences. The author also comments on effects of weight and weight transfer, but does not present data isolating the effects of changes in such factors on the coefficient of friction.

The braking distances reported in the tests were distances obtained from the instant the stop-light switch was activated, and this activation can vary slightly by vehicle. If a detonator is activated by a switch mounted *on* the brake pedal, the possible effect of such vehicle differences can be minimized.

Age and Season. The publication also refers to literature on the effect of age of pavement and season of year on coefficients of friction. These effects apply primarily on wet pavement. Tests repeated every six months on dry pavements in Indiana, for example, show no appreciable change between six-month intervals (Special Report No. 36, Joint Highway Research Project, Purdue University, 1956).

Conclusion. The author has made definite contributions to knowledge in certain areas but has made general statements which imply that almost any calculation of speed from skidmarks is invalid. These statements are bound to cause difficulty when quoted in court cases. Additional data on some of the points would be quite useful to establish more definitely the range in such variables as effect of type of vehicle on locked-wheel stopping distances on dry pavement.

Guides to Desirable Procedure

It is considered by the author of this review that skidmarks are useful in estimating minimum speeds primarily in the case where a vehicle has laid down four skidmarks on a dry pavement. They are especially helpful when the vehicle was not damaged (as in a pedestrian accident). *The Traffic Accident Investigator's Manual for Police* states on page 426: "If the drag factor is based on *correctly* made skid tests or is the *lowest* value which the pavement described would be likely to have, and if the distance used is based on skidmarks, you can see clearly that this speed is one above which the car must have been travelling beyond a reasonable doubt."

This statement can be supported easily for dry-pavement skids, although the general procedure for making the test skids, as set forth on page 306-307 of the *Manual*, needs some additions for higher accuracy testing for enforcement purposes:

1. If not possible to use the same car, transfer the *same* tires to a similar car with brakes that will lock all four wheels. If this is not possible make test skids with at least two similar cars having similar tires.

2. An electrically-operated braking distance pavement marker should be used, with the switch for firing mounted on the brake pedal.

3. Check speedometer accuracy by pacing the test car with a calibrated speedometer, and calibrate it at the test-speed range.

4. Compute coefficient of friction, F, using braking distances, D, as obtained with pavement marker, and using the formula 3F on p. 445 of the *Manual*. The computed values of "F" are on the low side, because the distance "d" actually includes the distance travelled while the brakes were being applied, and before the full retarding force was developed. Any variation in test-skid procedure will produce F values which favor the driver.

5. Use the average of the lengths of the four skidmarks in the accident as "d" in computing the minimum speed for the accident. Use as the value of F, the lowest value as determined for the several test skids. Solve for minimum speed, $S = 5.5 \sqrt{FD}$. Correct for grade when necessary.

* * *

MAY 15 IS DEADLINE FOR TPA APPLICATIONS

The Traffic Institute wishes to remind police agencies that the deadline for submitting applications for the 1957-58 Traffic Police Administration Training Program is May 15—two weeks earlier than has been the case in previous years. The Kemper Foundation for Traffic Safety, Chicago, will provide grant-in-aid awards totaling $39,120 to police departments to enable them to send qualified officers to the nine-month training program.

Application forms may be obtained from the Traffic Institute, 1704 Judson Ave., Evanston, Ill.

Illustrations from Training

Is Quality of Police Applicants Changing?

Recently a member of the Traffic Institute's Training Division examined and interviewed applicants for a police department near Evanston. He found that:

1. All of the applicants wanted to be policemen because they wanted to improve their salary, obtain greater job security, and security for their family—among other "values."
2. None of these applicants knew the starting salary of the position they sought, nor did they know anything specific about the pension plan or upon what their job tenure depended.
3. Most of the applicants scored below the average reading ability which could be expected of high school seniors, although they had completed at least 12 years of formal schooling.
4. Their writing scores, a result of answering three questions in essay style, were very low. Most applicants used fairly common words but were not able to spell them very well.

Conclusions:

These men could easily, and very shortly after being accepted as policemen, become most dissatisfied with the job benefits if they did not have any more specific information than they had during their application processing period. It was interesting to note that they felt no personal disadvantage in their lack of knowledge of specifics. They were just sure the working conditions and advantages would be better for them. This degree of status improvement was not evident, however, as some of them compared their present status to their future status as police officers.

Most of the men would get very little information from reading an instructional or procedural manual. The department's training program should be revised to compensate for this weakness.

The candidates have serious difficulty expressing themselves in writing. If the reports they submit are not understandable, the community will have a poor record of police incidents. (The department's forms might be completed but the information noted thereon might also be non-sensical). In addition, police reports with poor spelling, grammar, and thought expression can have a most undesirable effect on the public and official opinion of the department.

If you do not know whether these conditions are present in candidates for your department—you should know. If these conditions are present—has your recruit training content been revised in light of these deficiencies?

Submitted by James M. Slavin, Assistant Director of Training.

Second Straight Month:

Traffic Deaths Down Again!

THE DOWNWARD trend in traffic deaths continued even more strongly in February, the National Safety Council has reported.

February traffic deaths dropped 7 per cent—2,540 as compared with 2,730 in February last year.

This marked only the third time in the last two years that traffic deaths have decreased, the Council said. The last time there was a reduction in two consecutive months—the January toll was down 3 per cent— was in January and February, 1955.

The traffic death toll for the first two months this year was 5,400—down 5 per cent. No travel information is available so far this year, so the Council said it could not relate the decrease to any change in mileage.

The improvement was widespread, which the Council said minimizes the effect of weather. Of the 48 states reporting for February, those with fewer deaths outnumbered those with more, 25 to 22, with one state showing no change.

For the two months, 27 states had reductions, 18 had increases and three reported no change. The 27 states with fewer deaths for two months were:

Massachusetts	−45%	Pennsylvania	−12%
South Dakota	−45%	Missouri	−12%
New Hampshire	−33%	Connecticut	−12%
Michigan	−31%	Alabama	−11%
Nebraska	−29%	New York	− 9%
Idaho	−28%	Colorado	− 9%
Georgia	−24%	Oklahoma	− 8%
New Jersey	−22%	Mississippi	− 7%
Iowa	−22%	Louisiana	− 4%
Maryland	−22%	Arizona	− 4%
Kansas	−18%	Florida	− 2%
Ohio	−14%	Oregon	− 2%
Indiana	−14%	Virginia	− 1%
		Tennessee	− 1%

Cities alone were doing better than the nation as a whole. Among 576 cities reporting February experience, the improvement over the previous February was 14 per cent. For two months, it was 13 per cent.

Of the 576 cities, 488 had fewer deaths or no change in deaths in February. For two months, 461 had fewer deaths or no change.

Among cities with fewer deaths for two months, the following have populations of more than 200,000:

Syracuse, N. Y.	−100%	Detroit, Mich.	− 36%
Norfolk, Va.	−100%	Louisville, Ky.	− 33%
Boston, Mass.	− 83%	Oklahoma City, Okla.	− 33%
Richmond, Va.	− 71%	Tampa, Fla.	− 33%
Toledo, Ohio	− 60%	Philadelphia, Pa.	− 27%
Pittsburgh, Pa.	− 58%	Chicago, Ill.	− 23%
Seattle, Wash.	− 55%	New York, N. Y.	− 22%
St. Louis, Mo.	− 50%	Washington, D. C.	− 13%
Portland, Ore.	− 50%	Milwaukee, Wis.	− 13%
St. Paul, Minn.	− 50%	Indianapolis, Ind.	− 13%
Fort Worth, Tex.	− 45%	San Antonio, Tex.	− 11%
Cleveland, Ohio	− 42%	San Diego, Calif.	− 11%
Denver, Colo.	− 40%	Birmingham, Ala.	− 11%

In February, 430 of the 576 reporting cities had perfect records. Of these, the three largest were Denver, Colo. (415,800); Toledo, Ohio (303,600), and Syracuse, N. Y. (220,600).

For two months, 362 cities still had perfect records, the three largest being Syracuse, N. Y. (220,600); Norfolk, Va. (213,500), and Salt Lake City, Utah (182,100).

The three leading cities in each population group at the end of February, ranked according to the number of deaths per 10,000 registered vehicles, were:

	Reg. Rate		*Reg. Rate*
Over 1,000,000 Population		200,000-350,000 Population	
Detroit, Mich.	2.6	Norfolk, Va.	0.0
Chicago, Ill.	2.6	Syracuse, N. Y.	0.0
New York, N. Y.	3.5	Toledo, Ohio	0.8
750,000-1,000,000 Population		100,000-200,000 Population	
Cleveland, Ohio	2.1	Salt Lake City, Utah	0.0
St. Louis, Mo.	2.5	Austin, Tex.	0.0
Washington, D. C.	3.6	Bridgeport, Conn.	0.0
500,000-750,000 Population		50,000-100,000 Population	
Boston, Mass.	0.7	Lansing, Mich.	0.0
Seattle, Wash.	1.2	Winston-Salem, N. C.	0.0
Pittsburgh, Pa.	1.5	Topeka, Kan.	0.0
350,000-500,000 Population		25,000-50,000 Population	
Denver, Colo.	0.9	Muskegon, Mich	0.0
Indianapolis, Ind.	1.9	Las Vegas, Nev.	0.0
Portland, Ore.	2.0	Boise, Idaho	0.0

KNOW THE LAW

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HIT-AND-RUN OFFENSES

(This is the concluding part of four installments.)

DUTIES IMPOSED UPON DRIVERS, OCCUPANTS AND WITNESSES IN ACCIDENT SITUATIONS

THE DUTIES and obligations of *drivers* involved in accidents with other driven vehicles or with pedestrians, as dealt with in preceding sections, are of long standing and general recognition. Statutes and ordinances prescribing such duties have been before the courts in countless instances and through construction and interpretation by the courts and perfecting amendments made by the law-making bodies these have, in most instances, become well established, legally sound regulations.

Other requirements, affecting drivers involved in other types of accidents, and those imposing duties upon persons other than drivers, are of more recent development and therefore of less general recognition. Also, due to their recent origin, there have been few, if any, reported decisions in which such laws have received judicial interpretation, so that precedents are lacking as to their validity as well as their application.

DUTY OF DRIVER STRIKING UNATTENDED VEHICLE

Typical of such recent innovations are statutes and ordinances patterned after the Uniform Vehicle Code[122] which provides: "The driver of any vehicle which collides with any vehicle which is unattended shall immediately stop and shall then and there either locate and notify the operator or owner of such vehicle of the name and address of the driver and owner of the vehicle striking the unattended vehicle or shall leave in a conspicuous place in the vehicle struck a written notice giving the name and address of the driver and of the owner of the vehicle doing the striking and a statement of the circumstances thereof."

This, of course, represents an extension of the theory of requiring identification following an accident. Here, however, the broad term "acci-

122. Sec. 10-105.

dent" is absent and the prescribed duties apply to a driver whose vehicle has *collided with*, i.e., *struck*, an unattended vehicle. Obviously the main purpose of this requirement is to furnish identity, not only of the driver *but also the owner* of the striking vehicle—a feature lacking in the laws previously discussed. No element of aid to injured persons is involved.

The quoted language is subject to the construction that the operator of the striking vehicle is given the choice of one of two alternative courses of action to be performed by him "then and there": (1) he may locate and notify the operator *or* owner *or* (2) he may leave a written notice containing such information, *plus* a statement of the circumstances of the striking "in a conspicuous place *in* the vehicle struck."

Analysis of the various aspects of these provisions reveals a number of features differing from those of the usual hit-run provisions. Here the identity of the *owner* of both cars becomes important, whereas this is not an element of the older type laws. Here also, in the event of leaving a written notice, the driver must make a statement of the circumstances of the striking. He has a choice between two possible courses of action, *i.e.*, locating the owner or operator and furnishing identification, or leaving the written notice. In this offense it is not necessary that any damage result from the collision, although the additional requirement of immediately notifying the police does apply if there is damage resulting to the amount specified.[123]. As in the usual hit-run cases, the matter of liability or blame for the accident is not an element and the fact that the struck vehicle is unattended does not automatically imply fault on the part of the driver whose vehicle collides with it, as where the struck vehicle has been left unlighted in the traveled portion of the road or street at night, or under conditions of low visibility which render it a hazard to traffic. Doubtless the element of knowledge would apply to a driver charged under this type of law, so that the duties prescribed would devolve only if the collision occurred under such circumstances that it could be implied he knew or should have known of the striking.[124]

Probably in the ordinary case in which a driver strikes a parked car on a city street, performance of one or the other of these duties would present no special difficulty. But it is in the difficult, unusual situations that such laws receive their tests, and, under elementary rules of statutory construction, the effect and validity of such laws is dependent upon what *may* be done under their terms, rather than what *is* done. Thus the effect of the above quoted language must be determined by reference to extreme possibilities of occurrence within its terms.

As illustrated in the foregoing portions of this treatise, the law does not require the impossible. For purposes of illustration, suppose a driver strikes an unattended vehicle stalled in the roadway at night, without

123. Sec. 10-107, Uniform Vehicle Code
124. See. nn. 29-35, supra.

lights, in a snow storm. Under the law he is duty bound "then and there" to locate the driver or owner of the struck vehicle, but there is no one in the vicinity. Like most drivers, he is not foresignted enough to have writing materials in his car, so that the first alternative is incumbent upon him, *i.e.*, to "locate and notify" the operator or owner of the other vehicle. Obviously, it is an impossibility for him to do this "then and there," and equally impossible for him to leave the written message *in* the vehicle, which may be locked. Incidentally, it may not be an automobile or truck with which he collided; it may be a wagon or other "device in, upon, or by which any person or property is or may be transported on a highway."[125]

To "locate and notify" the owner or operator of the struck vehicle then may be a task of considerable magnitude. Laws do not all require identification certificates to be carried in the vehicle, and all "vehicles" do not require registration. On motor vehicles, such as automobiles, the law commonly requires registration plates, so in this instance the driver of the striking vehicle has a lead which he may follow to "locate and notify" the owner. Not to extend the unfortunate possibilities further, it need only be suggested that the struck vehicle may have been stolen and abandoned where found and all means of identification removed therefrom. . . .

In any event, the driver involved in the striking of an unattended vehicle usually must leave the scene to investigate the ownership of the struck vehicle, and it cannot be done "then and there." To require him to do this would be unreasonable and arbitrary in requiring the impossible. "Then and there" quite obviously means "at once, before proceeding elsewhere; at that time and at that place."

Reverting to the other alternative, the choice of leaving a written notice involves the element of making "a statement of the circumstances" of the striking. Some might argue from this that the striking driver is thus compelled to give possible incriminating evidence against himself and that such a law is therefore unconstitutional because in violation of the privilege against self-incrimination—that this type of law goes far beyond that which merely requires the giving of information which only serves to identify the striking car and the driver and which the courts many times have ruled is not in violation of the privilege.[126]

To refute this argument some may be tempted to contend that such a written "notice" is in the nature of a report covered by the section in the Uniform Vehicle Code which provides that "all accident reports made by persons involved in accidents . . . shall be without prejudice to the individual so reporting . . ."[127]. Thus also would such a notice be confidential

125. Sec. 1-184, Uniform Vehicle Code (1956), so defining *vehicle*.
126. See nn. 15-18, supra.
127. Sec. 10-117, Uniform Vehicle Code (1956).

and the contentents thereof inadmissible in any case arising out of the accident (except that portion dealing with the identity of the person who gave the notice). But a careful study of this particular section and the other sections of the particular article of the Code in which it is incorporated, with their specific references to reports required to be made to "the department" (State Department of Motor Vehicles), indicates clearly that it was not intended this notice to the driver or owner of another vehicle should be covered by this particular section.

The true answer is that this type of law is not unconstitutional because under its provisions a person in giving written details of his striking another vehicle might possibly recite facts which would incriminate him in the commission of a criminal offense. He is not required to do this—he is given the other choice of merely giving identification information to the owner or driver of the other vehicle. If the striking driver chooses this alternative open to him under the law instead of bothering to find the owner or driver of the struck vehicle, it is a voluntary choice which no one has *compelled* him to make. The situation is analagous to those arising under the "implied consent" laws enacted in connection with chemical tests to determine alcoholic influence. The courts have held that such laws do not violate the privilege against self-incrimination by giving the motorist arrested for driving while in an intoxicated condition the choice of either submitting to a chemical test of his blood or losing his privilege of operating a vehicle upon the highways.[128]

In the absence of authoritative interpretation of these various phases of the law it is difficult to predict with accuracy how the courts will deal with them in future cases. Unfortunately, the only reported case so far discovered involving the conviction of a driver for failure to perform his statutory duties upon striking an unattended vehicle was affirmed without opinion.[129] Students of traffic law will watch with interest the development of the law in this comparatively untried field.

In view of the comprehensive and much more liberal provisions of the section following, discussed immediately hereinafter, the practical value of this section seems doubtful. An unattended vehicle certainly is *property* and may be either "legally upon or adjacent to a highway," as well as fixtures or any other type of property.

ACCIDENTS INVOLVING DAMAGE TO FIXTURES AND OTHER PROPERTY

It will be recalled that modern hit-run statutes patterned after the provisions of the Uniform Vehicle Code relate only to personal injuries or damage to *vehicles*, insofar as accidents involving attended vehicles or pedestrians are concerned.[130] Damage to property other than vehicles

128. Schutt v. MacDuff, 205 Misc. 43, 127 N.Y.S.2d 116 (1954); Anderson v. MacDuff, 208 Misc. 271 143 N.Y.S.2d 257 (1955).
129. State v. Anderson, 241 Iowa —, 44 N.W 2d 407 (1950).
130. See n. 2, supra.

is not material. Such statutes have sought to cover damage to other types of property by means of provisions such as sec. 10-106, Uniform Vehicle Code (1956):

> "The driver of any vehicle involved in an accident resulting only in damage to fixtures or other property legally upon or adjacent to a highway shall take reasonable steps to locate and notify the owner or person in charge of such property of such fact and of his name and address and of the registration number of the vehicle he is driving, and shall upon request and if available exhibit his operator's or chauffer's license and shall make report of such accident when and as required in sec. 10-108 hereof."

It will be noted that this language, like that of the usual hit-run statutes, applies to drivers of vehicles *involved* in accidents, but unlike that of the provision above discussed, relating to *striking* unattended vehicles. As in the case of the latter provisions, however, few, if any, reported cases are found construing the above quoted provision.

An analysis of such provision and comparison thereof with the requirements of the usual hit-run laws discloses some interesting similarities and dissimilarities. For instance, this imposes no duty to stop at the scene. The driver involved does not have to do anything "immediately" or "then and there." The amount or extent of resulting damage is not material. All that is required of him is that he "take reasonable steps" to locate and notify the owner or person in charge of the property "of such fact," (apparently referring to the fact of the accident) and furnish the usual items of identification. Identification of the owner of his vehicle is not required as in the case of striking an unattended vehicle. It is perhaps significant that this notice and information must be given the *owner*, if there is no person in charge of the property or if he cannot be located. Notice to the owner's agent is not specified, nor is the type of notice, *i.e.*, written or oral, mentioned. In view of these provisions no doubt a letter containing the necessary information addressed to the corporation owner of a utility pole damaged in the accident, sent within a "reasonable" time would constitute compliance with this section. Note that he is not absolutely required to give this notice and information—he need only take "reasonable steps" to do so. The section adds the requirement of filing a written report as required in section 10-108 which means the striking driver also must file a written report with state authorities when the extent of the damage to the fixtures reaches an amount above a certain level.

The question arises as to the purpose of restricting the operation of this section to property "legally upon or adjacent to a highway." The provisions of the entire chapter relating to this and similar offenses are expressly made to apply "upon highways and elsewhere throughout the

state." The usual hit-run provisions applying to accidents resulting in personal injury and damage to *vehicles* are not confined to the highway area and it seems inconsistent to restrict offenses resulting in damage to other property thereon. Surely the identification of drivers causing damage to other types of property is as important to the owner thereof as to the owner of a vehicle, wherever it may be.

The older statutes and others which have not adopted the language of the Uniform Vehicle Code[131] relating to accidents "resulting in damage to a vehicle," are not by their terms so restricted to vehicle damage, but extend to "damage to property." Some of these statutes have come under the scrutiny of the courts in various cases and so, fortunately, we find reported cases discussing the interpretation of "property" as used in such statutes. For example, the Alabama Court of Appeals, dealing with a case involving a hit-run statute relating to "damage to property" said: "It is apparent from a mere reading of the Act of 1945, that insofar as injury to property is concerned, the now governing law has been restricted to injury to vehicles. The term 'property' as used in the (earlier) code section must be construed to apply to that which is the subject of property, and in this sense it includes everything corporeal and incorporeal which is the subject of ownership. The indictment therefore, by its use of the broad word 'property' includes injuries to things beyond the scope of the Act of 1945. By its broad terms the indictment charged an offense not prohibited by law. The court therefore erred in overruling the demurrer in this aspect."[132]

The Supreme Court of Missouri expressed itself to substantially the same effect in a case which came before it in 1926, in which the information charged the accused with leaving the scene of an accident resulting in "damage to property." Defendant contended this was defective in that it failed to describe the property. In rejecting this contention the court said: "The argument is that the offense charged is injuring property and leaving the scene of the accident. The mention of injured property in the information is merely a description of the circumstances under which the crime was committed. The crime consists in leaving the scene of the accident. * * * Where property, or the ownership of property, is merely incidental and not an essential element of the crime which is charged in the information, it is not necessary to allege with particularity the ownership or description of the property. The offense here is leaving the scene of the accident after an injury to property has occurred. * * * It does not matter what kind of property it is. It is no more necessary to describe the particular injury caused to the property than it is to describe the particular point in the road where it occurred."[133]

131. Sec. 10-103.
132. Echols v. State, 35 Ala.App. 602, 51 So. 2d 260 (1951). In this case the defendant was charged with failure to stop following an accident resulting in damage to *property*, and the lower court had held the indictment sufficient to charge a crime. This ruling was reversed by the Court of Appeals since the statute of 1945, under which the prosecution was brought, related only to damage to a *vehicle*.
133. State v. Hudson, 314 Mo. 599, 285 S.W. 733 (1926).

A dog, being the subject of ownership, has been held to be "property" within the meaning of such statutes.[134]

The question undoubtedly has arisen in unreported cases involving this or similarly worded statutes and ordinances: when is property "adjacent" to a highway? In other types of cases this term has been construed as meaning "near to" or "close to" but not necessarily adjoining or abutting. If the term "immediately adjacent" were used it would mean "adjoining" or "contiguous to."[135]

"Fixtures" has a well defined meaning in the law, as anything of an accesory character annexed to houses and lands so as to legally constitute a part thereof.[136] In this category, then, would fall such property as fences, sheds, barns or other buildings attached to the real estate; trees, posts, utility poles and other items forming a part of the land. Fixtures are to be distinguished from movable, portable chattels which are classified as "personalty." Thus, damage to "fixtures" is confined to property of this character of being part of the real estate.

Fixtures or other property *legally upon or adjacent* to a highway have not been judicially defined so far as the reported cases disclose. Obviously the definition would include any property or thing which is the subject of ownership. Whether property is "legally upon or adjacent to" the highway is another question. Thus, damage to a post or shed *illegally* encroaching upon a highway, or placed there in violation of zoning ordinances, probably would not be included. Questions relative to animals running at large on the highway in violation of statute or ordinance are indicated in this connection. Still the legality of the presence of such property constitutes an element of the offense and doubtless will give rise to judicial interpretation in the future.

DRIVER'S DUTY TO NOTIFY POLICE

Another duty incumbent upon the driver of a vehicle involved in an accident is to notify the law enforcement authorities of such accident. Statutes and ordinances commonly prescribe such duty as follows: "The driver of a vehicle involved in an accident resulting in injury to or death of any person or property damage to an apparent extent of ($100)[137] or more shall immediately by the quickest means of communication give notice of such accident to the local police department if such accident occurs within a municipality, otherwise to the office of the county sheriff or the nearest office of the State Highway Patrol department.[138]

Analysis of these provisions discloses that the *damage* is not restricted to that sustained by a vehicle; the term "property damage" includes

134. People v. Fimbres, 107 Cal.App. 778, 288 P. 19 (1930), discussed supra n. 50.
135. Superior Steel Products Corporation v. Zbytoniewski, 270 Wis. 245, 70 N.W.2d 671 (1955), involving a statute requiring tail light on vehicles parked "immediately adjacent" to the highway. A truck parked eight feet from the highway was not "immediately adjacent." For other definitions see Adjacent, Words and Phrases, in which some cases are citing holding "adjacent" means the same as "adjoining" or "contiguous."
136. Webster's New International Dictionary
137. Amount varies in different jurisdictions.
138. Sec. 10-107, Uniform Vehicle Code (1956)

any kind of property.[139] When there is no death or personal injury, such a notice need not be given unless its "apparent extent" exceeds the amount specified. It is significant that the "apparent extent" governs, not the actual extent as may be determined by later examination. Furthermore, the total aggregate damage resulting from the accident must be used in computing this apparent amount, regardless of how much damage may be distributed among the various vehicles or other property affected.[140] Also, the duty to give notice is placed upon the driver.[141]

The requirement of giving immediate notice of accident as prescribed in such statutes is entirely separate and distinct from the duty imposed by other sections relative to filing written reports thereof at some later time. The purpose of giving notice to the police is to summon them to the scene. As expressed by an opinion of the Wisconsin attorney general: "The local report is for the purpose of bringing to the accident scene trained officers to aid the injured, to restore normal traffic conditions as quickly as practicable, to avoid further accidents and injuries and to record objectively their findings with respect to physical facts as they may aid in fixing responsibility for the accident and thus enable the officers to vindicate public wrongs by prosecuting for traffic violations if necessary." Written accident reports filed with the department obviously have a different purpose, *i.e.*, to enable the Motor Vehicle Department to discharge its duties in connection with administration of financial responsibility laws "and to obtain an accurate collection of facts relating to the number and circumstances of traffic accidents for legislation and other related purposes."[142]

That the purpose of the required notice to police is to summon them to the scene is borne out by the terms of the law itself. A driver coming within its terms must immediately "*give notice* of such accidents." There is no requirement here that it be in writing nor that he identify himself or give details, and, this being a criminal statute, no such duties may be implied. Hence, a telephone call to the police, stating the fact of the accident and the location thereof doubtless would be sufficient both to satisfy the letter of the statute and to fulfill its purpose in enabling investigating officers to find the location in order to perform their duties in such situations, as outlined by the Wisconsin attorney general.

We are indebted to the same opinion for a well considered discussion of the meaning of the word "immediately" as contained in such statutes. He concludes that this word is intended to mean *within a reasonable time* following the accident, as determined by the facts and circumstances. Whether the driver performs his duty *immediately* is a question of fact in each case, and no general rule can be laid down to govern all cases

139. See nn. 132-134 supra.
140. See Opinion of Attorney General, Wisconsin, 29 O.A.G. 347 (1940).
141. See n. 143, infra, prescribing duty on occupant in event of driver's incapacity.
142. 43 O.A.G. (Wisconsin) pp. 90-93 (1954).

other than to suggest: (1) his humanitarian duty to render aid to the injured or to call medical help in case of serious injury would undoubtedly be regarded by courts and juries as a reasonable excuse for failure to report first to the enforcement officers; (2) the longer the interim between the occurrence of the accident and the time of giving the notice, the more unlikely it becomes that reasonable excuse exists for failure to give earlier notice; (3) showing such excuses is an affirmative defense and the accused would have the usual burden of establishing it, depending upon requirements of criminal practice in the particular jurisdiction.

Reason and logic sustain this view, since the law imposes a number of burdens upon a driver involved in an accident. As pointed out in an earlier portion, the law does not require the impossible and it would be an unreasonable and arbitrary law which would seek to require performance of all of these duties instantaneously and simultaneously.

DUTIES IMPOSED UPON PERSONS OTHER THAN DRIVERS INVOLVED IN ACCIDENTS

Statutes and ordinances patterned after the Uniform Vehicle Code provide: "When driver unable to report. (a) An accident report is not required under this chapter from any person who is physically incapable of making report during the period of such incapacity. (b) Whenever the driver of a vehicle is physically incapable of giving an immediate notice of an accident as required in section 10-107 and there was another occupant in the vehicle at the time of the accident capable of doing so, such occupant shall make or cause to be given the notice not given by the driver."[143]

Except for written reports to the Department of Motor Vehicles required of the driver or owner within five days,[144] those which must be made by investigating officers or which may be required of witnesses,[145] by coroners,[146] and garages,[147] no further duties seem to be imposed upon persons other than the driver, insofar as immediate performance at the scene of an accident is concerned. The written notice of the "circumstances" to be left in an unattended vehicle which is struck[148] need not be left by an owner in event of disability of the driver; it is not "a written report" of an accident as required in section 10-108 since this refers only to reports which must be made to the *department*.

If the driver at the scene of an accident resulting in death, personal injury or damage to vehicle or property in an amount specified in statutes such as section 10-107 is physically incapable of giving immediate notice thereof to the police, then such duty devolves upon the occupant, pro-

143. Sec. 10-111, Uniform Vehicle Code (1956).
144. Sec. 10-108, Uniform Vehicle Code (1956).
145. Sec. 10-110, U.V.C.
146. Sec. 10-115, U.V.C.
147. Sec. 10-116, U.V.C.
148. n. 122, supra

vided he is "capable of doing so." He need give no more or different information in this respect than the driver himself would have had to give. Furthermore his duty is in the alternative: he may give "or cause to be given" the notice not given by the driver. To "cause to be given" is a different matter than giving it himself. One may cause a notice to be given by sending a messenger or detailing an agent to perform the duty. No such choice is afforded the driver in such circumstances.[149]

A peculiar provision of the Virginia hit-run statute [150] has been declared unconstitutional for failure to meet the fundamental tests of certainty and definiteness required for validity of a criminal statute in attempting to require action by occupants, witnesses and others having knowledge of the accident.[151] The statute, in terms substantially similar to the usual hit-run requirements in case of accident resulting in death, personal injury or property damage, contained the following concluding paragraph: "It shall be the duty of any occupant, witness or other person having knowledge of such accident to furnish as much of the information hereinbefore required as possible if the driver is unable or unwilling to furnish it." Caldwell was charged and convicted of violation of this latter provision. He was riding in a car driven by one Stubbs, who struck a pedestrian on the streets of Norfolk, Virginia. After the impact, Stubbs left the scene without stopping and neither he nor Caldwell reported the accident or performed any of the duties imposed by the statute.

The court, in reversing the conviction, pointed out that any valid criminal statute must specify with reasonable certainty and definiteness the conduct which is thereby commanded or prohibited, *i.e.*, what must be done or avoided, so that a person of ordinary intelligence may know what is required of him. In holding that the concluding paragraph of the section failed to meet these basic requirements the court said: "It is clear that the second paragraph of the statute fails to measure up to these constitutional requirements. It fails to specify when and to whom the occupant or other witness must furnish the required information. The first paragraph requires the driver of a motor vehicle to stop 'immediately' at the scene of the accident 'or as close thereto as possible without obstructing traffic' and give the specified information. But the second paragraph, imposing the duty on the occupant or other witness, does not require that he stop at the scene, nor does it specify when he must furnish the information required of him."

The attorney general argued that the language should be interpreted to require giving the information within a reasonable time after the accident. The court said it could not rewrite the statute so as to incorporate a material element omitted therefrom. "It is the function of the judiciary to interpret statutes. Rewriting them is the function of the legislature." Continuing its discussion of the validity of the statute, the court said:

149. Sec. 10-107—"The driver * * * shall immediately * * * give notice * * *."
150. Sec. 46-108.
151. Caldwell v. Commonwealth, — Va.—, 94 S.E.2d 537 (1956).

"Moreover the statute does not specify to whom the occupant or other witness must furnish the specified information." As to this the attorney general argued that the legislative intent was that the required information be given to the same persons to whom the driver is required to furnish it. However, the court pointed out that the statute contained no requirement to this effect and none requiring the occupant or other person to give the information to the police. Concluding, the court said: "We hold that the second paragraph of the statute on which the prosecution of this defendant is based is fatally defective in that it fails to specify when and to whom the occupant or other witness must furnish the required information."

* * *

TRAINING CALENDAR

(*All training courses will be conducted at the Traffic Institute, Evanston, Ill., unless otherwise indicated.*)

Apr. 15-May 10—Motor Vehicle and Traffic Safety for the Army.

Apr. 29-May 10—Traffic Control—Devices and Methods.

May 6-17—Driver Improvement Through Licensing Procedures, conducted for AAMVA, University of Tennessee, Knoxville, Tenn.

May 15—Deadline for applying for 1957-58 Traffic Police Administration Training Program.

May 20-June 7—Motor Vehicle and Traffic Control for the Air Force.

June 3-7—Motor Fleet Supervision.

June 3-7—Traffic Court Conference, Fordham University School of Law, New York City.

June 3-14—Driver Improvement Through Licensing Procedures, conducted for AAMVA, University of California, University Extension, San Francisco, Calif.

June 20-22—Northwest Region Conference for TPA Graduates, Missoula, Mont.

June 24-28—Chemical Tests for Intoxication.